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ESTIMATION OF AGE TRANSITION PROBABILITIES.

BY- ZINTER, JUDITH R.
NATIONAL CENTER FOR EDUCATIONAL STATISTICS (DHEW)

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THIS NOTE DESCRIBES THE PROCEDURES USED IN DETERMINING DYNAMOD II AGE TRANSITION MATRICES. A SEPARATE MATRIX FOR EACH SEX-RACE GROUP IS DEVELOPED. THESE MATRICES WILL BE USED AS AN AID IN ESTIMATING THE TRANSITION PROBABILITIES IN THE LARGER DYNAMOD II MATRIX RELATING AGE TO OCCUPATIONAL CATEGORIES. THREE STEPS WERE USED IN THE PROCEDURE--(1) TAKING THE RECIPROCAL OF THE NUMBER OF SINGLE YEARS OF AGE WITHIN THE SELECTED DYNAMOD II AGE INTERVALS, (2) TAKING MORTALITY RATES INTO ACCOUNT, AND (3) CYCLING THE 1960 POPULATION THROUGH THE MATRICES TO YIELD POPULATION ESTIMATES FOR SEVERAL YEARS. (HW)

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NATIONAL CENTER FOR EDUCATIONAL STATISTICS
Division of Operations Analysis

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Judith R. Zinter

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Alexander Mood, Assistant Commissioner

DIVISION OF OPERATIONS ANALYSIS
David S. Stoller, Director

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This note serves to describe the procedures used in the determination of the DYNAMOD II age transition matrices. There is a separate matrix for each sex-race group. These matrices will not be used directly in the DYNAMOD II computer program, but rather will be used as an aid in estimating the transition probabilities in the larger DYNAMOD II matrix that relates age to occupational categories (students, teachers, and "elsewhere.").

The first approximation to a particular age transition was made by taking the reciprocal of the number of single years of age within the selected DYNAMOD II age intervals. For example, the first approximation of the probability that one in the 0-4 age group will be in the 5-14 group the following year is simply .2; the estimated probability of his remaining in the 0-4 group is then .8.

The next step in the estimation process involves taking into account the mortality rates described by T. Okada in **Technical** Note No. **11.** These rates were applied to the first approximations reducing them proportionately.

Finally, the 1960 population was cycled through the matrices yielding population estimates for several years. These estimates were then compared to those made by the Census Bureau in their Current Population Survey.

When these two estimates were not in agreement, appropriate adjustments were made in the transition probabilities. The 1960

population was then recycled and again compared to the Current Population Survey. This process was continued until the two estimates agreed as much as possible. The resulting transition probabilities for each of the four sex-race groups are attached.

AGE TRANSITION PROBABILITY MATRICES

WHITE MALES

	0-4	5-14	15-19	20-24	25-44	44+	Dead
0-4	.7965	.1980					.0055
5-14		.9064	.0931				.0005
15-19			.7998	.1989			.0013
20-24				.7999	.1984		.0017
25-44					.9472	.0502	.0026
44 +						.9682	.0318
Dead							1.0000

WHITE FEMALES

	0-4	5-14	15-19	20-24	25-44	44+	Dead
0-4	.7973	.1985					.0042
5-14		.9066	.0931				.0003
15-19			.8000	.1995			.0005
20-24				.8002	.1992		.0006
25-44					.9480	.0506	.0014
44 +						.9778	.0222
Dead							1.0000

NON-WHITE MALES

	0-4	5-14	15-19	20-24	25-44	44+	Dead
0-4	.7920	.1973					.0107
5-14		.9061	.0932				.0007
15-19			.7996	.1988			.0016
20-24				.7993	.1979		.0028
25-44					.9464	.0475	.0061
44 +						.9648	.0352
Dead							1.0000

NON-WHITE FEMALES

	0-4	5-14	15-19	20-24	25-44	44+	Dead
0-4	.7936	.1978					.0086
5-14		.9064	.0931				.0005
15-19			.8002	.1990			.0008
20-24				.8003	.1984		.0013
25-44					.9478	.0483	.0039
44 +						.9738	.0262
Dead							1.0000